

Antibullying Interventions in Schools : Ingredients of Effective Programs

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Because bullying is a serious problem in Canadian schools, antibullying programs have been widely implemented to redress the problem. School principals in Ontario (N=395) completed a questionnaire to document the severity of bullying, the amount of anti-bullying resources, and the variety of antibullying activities in their schools. Results reveal that reductions in bullying in previous years, sufficiency of resources for resolving bullying, and amounts of antibullying programming were all positively associated antibullying program outcomes. These data suggest that the investment of time, effort, and money in school-based antibullying initiatives can lead to safer and more peaceful schools environments.

Key words: bullying, primary prevention, program evaluation

Comme l'intimidation est un problème sérieux dans les écoles canadiennes, des programmes de lutte contre l'intimidation font leur apparition un peu partout. Des directeurs et directrices d'école en Ontario (N = 395) ont rempli un questionnaire visant à documenter la gravité du problème, les ressources existantes et les diverses activités anti-intimidation mises en place dans les écoles. D'après les résultats du questionnaire, la réduction de l'intimidation au cours des années précédentes, la pertinence des ressources en place pour faire face aux incidents d'intimidation et le nombre de programmes de lutte contre l'intimidation étaient tous corrélés à l'amélioration des résultats en la matière. Ces données semblent indiquer que le temps, les efforts et les fonds investis dans les initiatives anti-intimidation contribuent à créer un climat de paix et rendre les écoles plus sécuritaires.

Mots clés : intimidation, prévention, évaluation de programmes.

Bullying is a serious social problem afflicting schools around the world, and it appears that Canada is no exception to this trend. Bullying is a subtype of aggressive behaviour in which the perpetrator exerts power over a weaker victim through various means including physical size or

strength, age, or psychological advantages, and that is repeated over time (Vaillancourt, Hymel, & McDougall, 2003). Bullying occurs within a dynamic relational context, and the roles children play within bullying relationships as bullies or victims consolidate over time. These features make bullying a particularly vicious kind of peer-on-peer aggression and render victimized children vulnerable to long-term consequences (Rigby, 2003).

Bullying comprises a variety of behaviours, but they can be sorted generally into two categories: direct bullying, which involves physical and verbal attacks on victims, and indirect bullying, which typically involves covert activities intended to isolate and marginalize victims (e.g., spreading rumours and excluding individuals from peer groups). Indirect bullying tends to be more difficult to observe than acts of direct bullying, making indirect bullying difficult for school authorities to detect. It appears that girls tend to favour verbal aggression or indirect bullying strategies, whereas boys most often use direct, physical methods (Crick & Nelson, 2002). Methods of bullying evolve through development, with physical bullying declining following its peak in early childhood, and verbal and indirect bullying increasing into adolescence before declining thereafter (Craig & Pepler, 2003). Results from a recent international study reveal a rather bleak picture of the scope of bullying problems in Canada. The data revealed that 54 per cent of Canadian boys and 32 per cent of girls bullied others in a six-week interval, and 34 per cent of boys and 27 per cent of girls were victimized in the same interval. With these results, Canada placed in the top quartile for bullying and the top third for victimization among the 36 participating countries (Craig & Pepler, 2003). Consequently, it is not surprising that educators in Canada, who are increasingly preoccupied with the problem of bullying, are seeking effective solutions for peer aggression and harassment.

Although the effects of bullying are not fully known, research evidence indicates clearly that bullying and victimization are toxic to children's health (Rigby, 2003). Victimized children tend to display internalizing symptoms, including anxiety, depression, diminished self-esteem, and social withdrawal (Nansel et al., 2001). Although victims as a group show the highest rates of depression, rates of depression among

bullies are still significantly higher than non-involved peers, and bully and victim groups have equally high rates of suicidal ideation (Roland, 2002). Children who bully also show negative health consequences from involvement in bullying. Perhaps the most significant and worrisome consequence of bullying others is susceptibility to future problems of violence and delinquency. For example, in a study of the dating relationships of bullies, adolescents who reported bullying others viewed their girlfriends or boyfriends less positively and equitably and reported more physical and social aggression with them than other adolescents (Connolly, Pepler, Craig, & Taradash, 2000). Research also suggests that adults subjected to victimization as children show long-term effects on their personal relationships and mental health (e.g., Josephson, 2004). A subgroup of victims reacts aggressively to abuse ("aggressive victims") and displays a distinct pattern of psychosocial adjustment. These children tend to display both the anti-social behaviour of bullies as well as the social and emotional difficulties of victims (Glover, Gough, Johnson, & Cartwright, 2000; Nansel et al., 2001). In a recent study of mental health problems associated with involvement in bully/victim problems, children in the aggressive-victim group were the most troubled, displaying the highest levels of conduct, school, and peer relationship problems (Juvonen, Graham, & Schuster, 2003). This profile of dysfunction places these youth at high risk for violent, even deadly, reactions to chronic bullying (Anderson et al., 2001).

Bullying, no longer viewed simply as a dyadic interaction between a perpetrator and victim, is increasingly situated within larger social systems like peer groups, families, and schools. Salmivalli (1999), who studied how bullying unfolds in peer groups, identified a variety of roles that peers can play in bullying situations. For example, "assistants" participate in secondary roles by helping the bully commit the act; "reinforcers" provide verbal encouragement to the bully as the act occurs. "Onlookers," although not directly engaged in the bullying, are an audience for the bully and tacitly reinforce the aggression with their attention (Craig, Pepler, & Atlas, 2000). This model finds support in empirical studies indicating that bullying frequently occurs in the presence of peers and that the actions of peers more often encourage the bullying than stop it (Craig & Pepler, 1997; Sutton & P. K. Smith, 1999).

Parents and home environments also contribute to bully/victim problems in children. Children who bully tend to come from homes where aggression is a favoured problem-solving method, negative emotional attitudes (e.g., lack of warmth and involvement) are common, and the children are encouraged to fight back when harassed (Glover et al., 2000). Furthermore, research indicates that chronically victimized children may have histories of insecure parental attachments in infancy and are subject to intrusive and overprotective parenting (Perry, Hodges, & Egan, 2001). Conversely, parents who communicate love and warmth, monitor their children, set age-appropriate limits, and use non-physical punishment to deal with misbehaviour constitute an important protective factor against involvement in bully/victim problems (Orpinas & Horne, 2005).

ANTIBULLYING INTERVENTIONS

Concurrent with the rising awareness of bullying and its consequences has been a marked increase in school antibullying interventions that address the problem from different angles. Individualized interventions target children who have had significant involvement in bullying situations, either as perpetrators or victims. These interventions typically focus on remedying specific externalizing problems of bullies or the internalizing problems displayed by victims, using interventions like social skills and assertiveness training and anger management (P. K. Smith, Ananiadou, & Cowie, 2003). Peer-led interventions, like befriending or conflict resolution, involve teaching peer helpers the basic skills of active listening, empathy, problem solving, and supportiveness that they need to help students involved in a bullying situation. These interventions involve the active participation of many students, promote communication rather than blame among those involved in bullying, and create roles and structures that encourage students to act in responsible and empathic ways (Cowie & Olafsson, 2000). The peer-led approach may be particularly advantageous for adolescents, who tend to be less accepting of adult authority and direction than younger children (Salmivalli, 2001).

The whole-school approach, currently popular in schools, is predicated on the assumption that bullying is a systemic problem, and,

by implication, programs must address the problem at all levels of a school community. The Olweus Bullying Prevention Program (Olweus, 1993) was the first comprehensive, whole-school intervention implemented on a large scale and systematically evaluated; most programs designated as whole-school share the core features of the original Olweus program. These features typically include activities for the entire school, such as the development of an antibullying policy, increased adult supervision on school grounds, and the establishment of an antibullying committee. Within classrooms, teachers may develop behaviour codes with the children and engage their students in a variety of curricular activities with antibullying themes. Parents of all children receive information about the schools' initiatives and goals, and they may be invited to participate directly in some activities. Whole-school programs may mobilize peer-helpers in mediation or befriending programs with appropriate adult supervision. In the context of these programs, schools may also solicit community stakeholders (e.g., community leaders and organizations) to become involved in their initiatives. Finally, targeted interventions are usually offered to children directly involved in bully/victim problems.

Although antibullying programs are ubiquitous in North American schools, and in some jurisdictions are required by law, few studies exist of the effectiveness of antibullying programs implemented in schools. Furthermore, the findings of these studies do not provide conclusive evidence for the effectiveness of such programs. For example, Salmivalli (2001) examined the impact of a weeklong, peer-led program in Finland to reduce bullying among children in grades 7 and 8. Results showed a positive effect of the intervention for girls but a negative effect for boys, who reported more pro-bullying attitudes at the end of the program. Teglasi and Rothman (2001) evaluated a 15-session, classroom program that used peer group and story form to improve social problem solving for bullies, victims, and bystanders. Their data from fourth- and fifth-grade children revealed reductions in bullying for non-aggressive children but increases for aggressive children (although these increases were smaller than increases observed in aggressive children in a wait-list control group). Baldry and Farrington (2004) evaluated a program for students aged 10 to 16 that taught social competence skills using

videotapes and written material. The program was effective with older children, who reported less victimization, but not with younger children, who reported more victimization. Finally, J. D. Smith, Schneider, P. K. Smith, & Ananiadou (2004), who meta-analyzed 14 studies of whole-school antibullying programs (including two Canadian studies), found that only one program yielded significant reductions in victimization and bullying, while the other 13 yielded either negligible changes or increases on these outcomes.

As this sample of findings illustrates, it is difficult to discern clear patterns in existing literature on the effectiveness of antibullying programs in schools. This inconclusive data hampers the efforts of school authorities who want to make sound, evidence-based decisions about appropriate programs. Clearly, there is a pressing need for more data from varied perspectives to advance understanding of the kinds of interventions that work for different groups of children. In this context, we designed a survey to explore the relations between various aspects related to the content and implementation of school-based antibullying programs and the perceived impact of those programs. We solicited the perspective of school principals for this survey because they are commonly in the position of selecting or approving these programs and therefore understand the nature of the programs, the way they are implemented, and the impact they have across the school environment.

We used a generic program logic model consisting of five basic components (i.e., needs, resources, outputs, activities, and outcomes) as a conceptual guide for the survey (Rush & Ogbourne, 1991). Needs correspond to the identified needs to which antibullying programs are expected to provide a response. Resources include human and fiscal inputs into the programs, and activities consist of program actions or implementation behaviours. Outputs are the necessary (but not sufficient) conditions required for achieving desired outcomes, including such things as who receives the program and in what "dosage." Finally outcomes are associated with the immediate, intermediate, and longer-term consequences of the program that align with program objectives. This generic framework, adapted to antibullying programs, guided questionnaire development, data analysis, and data interpretation for this exploratory study.

METHOD

Participants

We contacted the directors of all 90 English-language public and Catholic school boards in Ontario to request permission to recruit school principals in their districts to participate in a survey of school-based antibullying programs. We received positive responses from 43 school boards with a total of 3106 member schools. These 3106 schools and an additional 363 private schools not under the jurisdiction of any school board constituted the sampling frame for the study. All 3469 schools were entered into a single list, which was ordered alphabetically first by school board and then by school within boards. (For the purpose of this operation, the set of private schools was treated as a single board.) We constructed an initial sample of 1734 schools by selecting every second school on the list, beginning at a randomly selected starting point. Participation in the study was voluntary, and participating schools were anonymous to the researchers. Ethical clearance for this study was granted by the University of Ottawa's Research Ethics Board.

Procedure

We sent each school in the sample a survey package addressed to the school principal. It included a cover letter explaining the nature and purpose of the study, a blank questionnaire, and an addressed and stamped envelope to return the questionnaire. We asked the principals to complete the questionnaire themselves (which took approximately 20-30 minutes) or to delegate the task to another appropriate school official (e.g., vice-principal or guidance counsellor). Two weeks after the packages were sent, we mailed a reminder card to all school principals in the sample. Completed survey forms were sent to a private company for electronic scanning of responses.

Measures

The *Antibullying Program Survey* questionnaire, nine pages in length, comprised mainly scaled questions and was divided into four parts identified with headings, although we provided space for participants to add verbal comments.¹ In the first part, participants answered questions

related to the characteristics of the school and the student body. In the second part, 12 items probed the nature and severity of bullying problems at the school, including incidents of direct bullying (e.g., name calling, physical attacks, or stealing) and indirect and relational bullying (e.g., social exclusion or spreading rumours). Three additional items queried respondents about the adequacy of resources directed at solving bullying. In the third section, 30 items organized into six categories corresponding to the whole-school model (school, classroom, peers, parents, community, and individual children) inventoried current interventions and services in the school intended to deal with bullying and its effects. Six additional items queried respondents about who planned, delivered, provided resources, and received the programs and whose roles in creating and/or solving bullying problems were addressed in the programs. The fourth section probed a school's efforts to evaluate its antibullying programs. For the purposes of this study, we analyzed and used the data collected on all items in sections 1-3 of questionnaire, but excluded data from section 4. After we fully developed the questionnaire, we pilot-tested it with three local school principals, making a number of minor changes to the text on the basis of their feedback.

RESULTS

We received 395 completed and usable questionnaires for a response rate of 22.8 per cent. Private schools were somewhat over-represented in the final sample of respondents, comprising 17.5 per cent of the final sample relative to 10.4 per cent of the initial sampling frame of 3469 schools. Principals and vice-principals completed 88 per cent of returned surveys; the remaining 12 per cent were completed by delegates such as guidance counsellors or teachers. To test for equivalency of responses across school and respondent groups and to assess the representativeness of the sample, we conducted several preliminary analyses with the data. For the first of these analyses, we used standardized scores for the five key variables for this study (see Table 2: Variables 1, 2, 7, 13, 18) where each was entered as a dependent variable in a 2 (public versus private schools) \times 2 (principals and vice-principals versus others) fully factorial ANOVA. To reduce the chances of type II error, which is a more critical

consideration in this instance than type I error, alpha was set at .20 for this series of tests (Winer, 1971). The results showed that the main effect for school on all five dependent variables reached significance, the main effect for respondent on two of the five dependent variables (2 and 7) reached significance, and the interaction was significant on one of the five variables (7). To assess the representativeness of the sample, we tabulated data about characteristics of schools in the sample (see Table 1) and compared them to provincial norms for the 2000-2001 school year, which were the latest available norms (Ontario Ministry of Education, 2003). These data show that the sample of public and Catholic schools is roughly representative of Ontario schools on these variables, although the group of secondary schools in the sample tended to have a larger enrolment than the provincial average. Anecdotally, respondents from several secondary schools explicitly declined to participate because, they said, their schools are very small and highly specialized and, therefore, inappropriate to participate in the survey. Data on private schools in Table 1 reveal a number of important deviations between sample and population, including the proportions of secondary and elementary/secondary schools and student enrolments, particularly in the elementary and secondary schools. On the basis of these findings, we decided to exclude data from the private schools from subsequent analyses.²

Respondents provided additional information about the characteristics of their schools. Public and Catholic schools in the sample were located in varying geographical and socio-economic contexts: 52.1 per cent of elementary schools and 58.2 per cent of secondary schools were situated in urban areas; 39.4 per cent of schools were in communities of average SES, 42.5 per cent in communities of below-average SES, and 18.2 per cent in communities of above-average SES. In 84.3 per cent of participating schools, 20 per cent or fewer students were receiving special education services for learning-related difficulties. Similarly, in 75.8 per cent of schools, 20 per cent or fewer students belonged to visible minority groups, and in 77.8 per cent of schools, 20 per cent or fewer did not have English as their first language.

Table 1
School Characteristics: Sample and Population Data

School type	N (% of Total)		Enrolment: Mean (SD)		Teacher FTEs: Mean (SD)	
	Sam- ple	Pop- ulation	Sam- ple	Pop- ulation	Sam- ple	Population
Public and Catholic Schools						
Elementary	314 (79.4)	3963 (82.7)	371 (173)	362 (-) ^a	21 (37)	18 (-)
Secondary	81 (20.6)	830 (17.3)	1005 (401)	854 (-)	62 (26)	51 (-)
Private Schools						
Elementary	44 (63.8)	453 (61.0)	209 (227)	113 (-)	--	--
Secondary	16 (23.2)	80 (10.8)	216 (218)	154 (-)	--	--
Elementary/ Secondary	9 (13.0) (28.3)	210 (28.3)	252 (156)	221 (-)	--	--

^aDashes indicate that data are unavailable from source.

In preparation for analyses, we organized survey data according to the components of the program logic model. Table 2 displays the survey variables corresponding to each of the usual components of a logic model (needs, resources, activities, outputs and outcomes) along with relevant descriptive statistics. We derived aggregate scores on six of the 18 variables listed from multiple items, and scale-reliability statistics are reported for these scale variables in Table 2. The six different variables comprising the needs component together reveal the current levels of bullying occurring in the schools and the degree to which these levels have changed in recent months and years. The resources component includes six variables that collectively show the amounts of various resources (e.g., people, time, money, materials) dedicated to resolving bullying as well as respondents' opinion about the sufficiency of these resources (variable 8). The activities component includes three variables, the first of which (variable 13) represents the amount of antibullying programming currently offered in the schools. The two other variables in the activities component assess the degree of change in the amount of programming offered in schools in recent years. Within the outputs

component, two variables reveal how many different groups are targeted for interventions and the number of groups whose roles in creating and/or solving bullying problems are addressed in program activities. Finally, the outcomes component is comprised of a single 10-item variable that measures the impact of antibullying programming as observed by respondents.

Using *SPSS 13.0*, we ran multiple regression analyses to test the statistical significance of the relationships among the variables comprising the logic model components. In all regression analyses reported below, the variables in the first four components of the logic model listed in Table 2 (i.e., needs, resources, activities, and outputs) function as predictors of a single criterion variable: impact of antibullying programs (variable 18). The objective of these analyses was to select the most parsimonious set of variables that accounts for unique

Table 2
Conceptual Framework of Questionnaire

Logic Model Components	Survey Variables (Sample Items) ^a	Mean (SD)	Number of Scale Items (Scale Points)	Scale Alpha
Needs	1. Direct bullying—frequency (name calling; assault; stealing)	3.01 (.89)	6 (5)	.87
	2. Indirect bullying—frequency (spreading rumours; social exclusion; ignoring)	2.96 (.79)	3 (5)	.83
	3. Seriousness of bullying (bullying is a serious problem; the degree of bullying at our school is greater than the average)	1.89 (.63)	2 (4)	.73
	4. Changes in bullying over previous 3 months	2.52 (.73)	1 (5)	
	5. Changes in bullying over previous 1 year	2.15 (.88)	1 (5)	

Logic Model Components	Survey Variables (Sample Items) ^a	Mean (SD)	Number of Scale Items (Scale Points)	Scale Alpha
Resources	6. Changes in bullying over previous 5 years	1.87 (1.06)	1 (5)	
	7. Amount of resources committed to antibullying initiatives (dedicating time and resources is highest priority; we commit substantial time and resources to solving bullying)	2.67 (.78)	2 (4)	.85
	8. Sufficiency of resources committed to antibullying initiatives to effectively deal with bullying	2.91 (.64)	1 (4)	
	9. Number of stakeholder groups involved in program planning	4.42 (1.92)	1 (12)	
	10. Number of stakeholder groups involved in program delivery	3.71 (1.66)	1 (7)	
	11. Number of different sources of program funding	1.51 (.75)	1 (7)	
	12. Number of different sources of non-monetary resources	1.58 (.81)		
	13. Amount of current antibullying programming (individual counselling; regular classroom discussion; peer-led interventions; antibullying committee; information for parents)	3.00 (.64)	24 (5)	.92
	14. Amount of current programming compared to 1 year ago	3.61 (.92)	1 (5)	

Logic Model Components	Survey Variables (Sample Items) ^a	Mean (SD)	Number of Scale Items (Scale Points)	Scale Alpha
Outputs	15. Amount of current programming compared to 5 years ago	4.32 (.95)	1 (5)	
	16. Number of different groups targeted for antibullying programming (students, families, teachers, administrators, whole grades)	5.80 (2.92)	1 (12)	
	17. Number of different groups whose roles in creating or solving bullying are addressed in programs (bullies, bystanders, parents)	8.03 (2.65)	1 (12)	
Outcome	18. Impacts of antibullying programs (school personnel use more effective strategies to stop bullying; number of students who bully has decreased; school atmosphere is more positive and peaceful.)	2.94 (.39)	10 (4)	.84

^aSample items are truncated to save space. Copies of the complete questionnaire are available from the first author (JDS).

variation in the criterion variable. To accomplish this, we undertook a two-step process to select variables for a final hierarchical regression in which blocks of predictor variables associated with each of the logic model components are stepped into the regression model.

In the first step of the selection process, we examined the zero-order correlations among the 18 study variables to assess the risk of multicollinearity among variables. As reported in Table 3, correlations among the predictor variables are all less than 0.70, and only two are above 0.60, leading us to conclude that the probability of violating

assumptions of multicollinearity in the regression analyses is low. Additionally, we identified 13 of the 17 predictor variables as having statistically significant correlations (i.e., $p < .05$) with the criterion variable, and all of these correlations were in the expected directions. These 13 predictor variables, therefore, were retained for the second phase of the selection process.

In the second step, proceeding one logic-model component at a time, all variables within each component were stepped sequentially into a regression equation beginning with the predictor having the highest correlation with the criterion. Predictor variables that did not account for unique variance in the criterion when the regression terminated were eliminated from subsequent analyses. Table 4 displays the results of these analyses for each of the logic model components. These results indicate that variables in the needs component account for the highest overall percentage of variance in the criterion and that outputs contributed the least. Additionally, one variable within the needs component, one within the resources component, and one within the activities component did not explain a significant proportion of variance in the criterion variable. Therefore, we dropped these five variables, and retained the remaining eight predictors for the final hierarchical regression analyses.

In the final phase of our analyses, the criterion variable, program impacts, was regressed onto the eight remaining predictors in a stepwise analysis. We entered variables within each logic model component simultaneously as a block beginning with the block with the largest corresponding R^2 value in the previous regression analyses and proceeding in order to the block with smallest R^2 value. Blocks were entered into the regression equation up to the point that the change in R^2 did not reach statistical significance. In the present analysis, we entered three blocks before this point was reached. The results of the third and final step of this hierarchical regression are displayed in Table 5. Variables comprising the last block did not add significantly to R^2 , therefore, they are not included in the final regression model.

Among the six predictors included in the final equation, beta weights corresponding to four of the variables reached statistical significance. Results for two need variables show a significant negative association

between program outcomes and changes in bullying levels over the previous 1- and 5-year intervals suggesting that respondents who reported lower levels of current bullying as well as decreases in bullying over the previous one to five years tended to report better outcomes for their antibullying programs. The results also show a strong, positive relationship between the sufficiency of resources to resolve the problem and the amount of programming offered in schools, on the one hand, and the degree of positive outcomes reported by respondents, on the other. The relationship between the predictors and criterion in the final model was strong, with a multiple correlation of 0.665. This means that predictors included in the final regression model account for a substantial 42.9 per cent of variance in the criterion variable.

DISCUSSION

In this exploratory study, we investigated the relationship between aspects of programs implemented in schools to reduce bullying and victimization and perceptions about the outcomes of these programs. In specific terms, we found that school principals who reported larger reductions in bullying over the previous one to five years, sufficient resources currently dedicated to resolving bullying, and higher amounts of antibullying programming tended to report better outcomes for the antibullying interventions implemented in their schools. These results lead us to tentatively conclude that, at least from the perspective of school principals, the investment of time, effort, and money in school-based antibullying initiatives can yield valuable returns by helping to create school environments that are safer and more peaceful for children, and, by implication, more conducive for learning and healthy development.

In light of the urgent need for effective solutions to bullying problems, these findings are encouraging for school officials, who have the difficult task of deciding where to invest limited, and often meagre, resources. However, it is important to note that these findings are generally not consistent with the findings of other studies on school-based antibullying and anti-violence programs. For example, J. D. Smith et al. (2004), who found that a large majority of the documented outcomes of whole-school programs were of either of negligible size or

Table 3
Zero-order Correlations between Survey Variables

Component	Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
Needs	2	.45**																	
	3		.25**	.23**															
	4			.07	-.04	.11*													
	5				.11	-.05	.14*												
	6					.07	-.09	.06	.35**	.59**									
	7						.20**	.19**	.40**	-.04	-.06	-.17*							
Resources	8							.12*	-.14*	-.46**	-.15**	-.27**	-.11	-.10					
	9								.10	.15**	.07	-.07	-.13*	-.16*	.19**	.04			
	10									.01	.13*	.05	-.01	-.12*	-.12	.21**	.05	.66**	
	11										.13*	.24**	.18**	-.01	-.11	-.20**	.11*	-.02	.26**
	12											.18**	.16**	.00	-.05	-.06	.12*	-.14*	.36**
	13												.34**	.35**	.18**	-.12*	-.15*	-.22**	
Activities	14																		
	15																		
	16																		
	17																		
	Outcome																		

Notes: * $p < 0.05$ ** $p < 0.01$

Table 4
Stepwise Regressions of Predictors (within Components) on Program Impacts (Outcome)

Component	Predictor Variables (N)	ΔR^2	B	SE B	β
Needs (223)	5. Changes in bullying over previous 1 year	.201***	-.135	.034	-.285***
	6. Changes in bullying over previous 5 years	.049***	-.102	.027	-.276**
Resources (300)	8. Sufficiency of resources	.129***	.219	.031	.366***
	10. Number of groups involved in program delivery	.075***	.055	.012	.240***
	7. Amount of resources	.029**	.090	.027	.176**
Activities (320)	13. Amount of current programming	.147*	.229	.031	.383***
	17. Number of groups whose roles are addressed	.067***	.028	.008	.202**
Outputs (320)	16. Number of groups targeted for programming	.016*	.017	.007	.139*
	Notes: * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$				

Table 5
Stepwise Regression of Predictors on Program Impacts (N=213)

Step	Predictor Variables	ΔR^2	B	SE B	β
1	5. Changes in bullying over previous 1 year	.274***	-.140	.030	-.210**
	6. Changes in bullying over previous 5 years		-.089	.023	-.250***
2	8. Sufficiency of resources	.108***	.141	.032	.241***
	10. Number of groups involved in program delivery		.013	.013	.058
	7. Amount of resources		-.010	.031	-.021
3	13. Amount of current programming	.048***	.174	.042	.287***

Notes: ** $p < 0.01$ *** $p < 0.001$

were negative, concluded that the effectiveness of this approach to solving bully/victim problems is not yet established. Howard, Flora, and Griffin (1999) synthesized the research on violence prevention programs in schools and found that these programs achieved, at best, only modest intervention effects. There are, however, isolated exceptions to this pattern, most notably the Olweus antibullying program developed through the pioneering work of Norwegian researcher, Dan Olweus (e.g., see Olweus, 1993, and for a more recent example, see Orpinas,

Horne, & Staniszewski, 2003). Limber (2004) described a number of challenges that face educators who wish to implement the Olweus program in American schools, and these may explain why whole-school programs have not been as successful in North America as they have in Norway. The challenges include the lingering resistance of educators and parents about the seriousness of bully/victim problems; the use of simple, piece-meal approaches; the larger size and complexity of American schools; less classroom time for bullying prevention; and the detrimental effects of widely used group treatments and peer mediation programs.

There are a number of possible explanations for the inconsistency between our survey findings and the trends in the literature, and we consider several of the more viable of these possibilities at this juncture. In the first place, although our initial sampling frame was large and assembled to reduce sampling bias, we had a low response rate. Therefore, we cannot be certain that our sample is representative of most schools in Ontario, at least in terms of their experiences with bullying and antibullying programs. As a case in point, survey respondents on average indicated that bullying tends not to be a serious problem in their schools and that the resources dedicated to antibullying programs are substantial and sufficient to deal with their bully/victim problems. This positive assessment contrasts with the bleaker picture of bullying in Canadian schools exposed by a recent international study (Craig & Pepler, 2003). Therefore, we cannot rule-out the possibility that our sample is biased in favour of schools that have invested heavily in antibullying programming and have experienced success at levels that surpass provincial norms.

A second possibility is related to the fact that our survey was addressed to school principals, whereas previous evaluations studies have used self-reports from school children as the primary data source. Although principals are informed sources with knowledge about antibullying activities in their schools, they offer only one perspective on these issues, and our findings and conclusions are necessarily constrained by this restricted point of view. It is possible, for example, that our informants' assessments of bully/victim problems in the larger school context arise less from direct observations than from other

information that may bias their assessments, such as discipline referral patterns, or the opinions of other school personnel. Other research shows that perceptions of bullying problems vary according to who is asked. By way of explanation, Pellegrini and Bartini (2000) suggested that children have greater access to information about bully/victim problems than adults, since bullying is usually perpetrated when adults are not present.

Finally, it is important for readers to keep in mind that our findings and conclusions are limited by design of this survey. The study was cross-sectional and correlational, which precludes making causal inferences with certainty about relationships among study variables. Additionally, our analyses are confounded by shared method variance, given that all items on the questionnaire are of similar format and are answered by the same respondents.

Implications for Practice

Our data point to several implications related to the implementation of antibullying programs in schools. The data show that the positive impact of programs did not appear in the short-term (i.e., 3 months), but over longer intervals, such as one to five years. This finding suggests that programs need time to penetrate a school culture and influence attitudes and behaviours of students and school personnel. This notion is consistent with substantial literature on educational programming in general (e.g., Fullen, 2001). Additionally, the data support the view that solutions to bully/victim problems require adequate resources because the schools' ratings of a variety of program outcomes were directly related to the amount of programming and the sufficiency of resources brought to bear on the problem. Undoubtedly, the multiple demands for services in the face of limited resources place school officials in difficult positions. However, a piece-meal approach with inadequate resources will likely have little impact on bully/victim problems and may leave students, parents, and school personnel frustrated about insufficient progress (Limber, 2004).

Implications for Research

Although many consider bullying to be a serious social problem in schools and communities and schools across Canada are implementing

anti-bullying programs, researchers have conducted very little research on the effectiveness of these programs, and much of the existing research is not rigorous. Clearly, scholars need more refined knowledge to assist school officials in developing effective antibullying interventions that they can tailor to the different needs of students. Additionally, despite the research that indicates differences in bullying behaviours as a function of age and gender (e.g., Baldry & Farrington, 2004; Crick & Nelson, 2002), very little research addresses how antibullying interventions may differentially influence subgroups of students. Therefore, our first recommendation is for much more research and program evaluations on interventions for bullying in schools, and it is critical that this research consider the influence of student characteristics on the outcomes of antibullying programs.

Making sense of the relationships between the variety of antibullying interventions delivered in schools and their putative effects is a complex task. To achieve this understanding, we recommend that researchers collect data from a variety of key informants in the school community (e.g., administrators, teachers, and students). Additionally, researchers should also collect information about the contexts in which these interventions occur. In the future it would be informative if researchers used layered evaluation designs to disentangle the program effects that result from implementing program in particular classrooms, particular schools, and particular communities. Clearly, bullying is a complex social problem, and effective solutions to bullying will only be identified through continued research and program evaluations that are commensurately complex.

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NOTES

¹ A copy of the questionnaire may be obtained from the first author.

² Overall, private schools indicated that they received fewer reports of bullying, dedicated fewer resources to solving bullying, offered fewer interventions, and benefited slightly more from antibullying programs than public schools. Unfortunately, the number of participating private schools (N=60) did not permit more detailed comparison between public and private schools.

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